AFZLW

Docket No.: KCC-15,481

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Daniel J. SORENSEN, et al.	
Serial No.:	09/849,594	Group No.: 1771
Filing Date:	04 May 2001	Examiner: E. Cole
Title:	LEAK-PROOF INTERMITTENT ULTRASONIC BONDS	
Confirmation No. 8899		
Customer No. 35844		

APPEAL BRIEF UNDER 37 CFR 41.37

Mail Stop Appeal Brief - Patents
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Dear Sir:

Applicants herewith file their Appeal Brief in the above-identified case, pursuant to their Notice of Appeal filed 10 December 2004.

1. REAL PARTY IN INTEREST

The real party in interest is Kimberly-Clark Worldwide, Inc., the assignee of the present application (as recorded at reel 012055, frame 0507).

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2. RELATED APPEALS AND INTERFERENCES

Applicants are not aware of any related appeals or interferences with regard to the present application.

3. STATUS OF CLAIMS

Claims 1, 3-10, 12-16, 18-29, and 31-32 are pending in the application. The present Appeal is directed to Claims 1, 3-10, 12-16, 18-29, and 31-32, which were finally rejected in an Office Action mailed 12 October 2004.

4. STATUS OF AMENDMENTS

No amendment to the claims was filed subsequent to the most recent final rejection.

5. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is directed to a leak-proof seal 16 that includes at least two layers 12, 14 of liquid-impermeable material at least partially positioned in overlapping relationship and bonded together by intermittent ultrasonic bond points 10 along an edge of at least one of the layers. (Page 8, line 19 – Page 9, line 2; Page 11, lines 19-21; Figs. 1 & 2). The bond points are aligned in at least three parallel rows with adjacent bond points in each row spaced sufficiently close together to create a seal between the bonds, namely at a distance between about 0.001 inch and about 0.20 inch from one another. (Page 9, lines 4-10 and 17-19). At least one of the bond points in each of the rows is equally spaced apart from at least three other bond points, and the bond points in adjacent rows are offset from one another. (Page 9, lines 4-6; Fig. 1). The strength of the bond is optimized through the use of point bonds, versus a solid bond. (Page 3, lines 11-12).

At least one of the liquid-impermeable materials may be part of a containment flap, and at least another one of the liquid-impermeable materials may be part of a garment, such that the containment flap and the garment are bonded together. (Page 8, lines 16-18). More particularly, the ultrasonic bond points join the liquid-

impermeable materials to one another and form a leak-proof seal 16 between the containment flap and the garment.

A bonding process for bonding together two layers 12, 14 of liquid-impermeable material includes the step of ultrasonically forming a leak-proof bond 16 between the two layers along an edge of at least one of the layers with discrete bond points 10 aligned in at least three parallel rows. (Page 8, line 19 – Page 9, line 10; Fig. 1). Adjacent bond points in each row are at a distance between about 0.001 inch and about 0.20 inch from one another, and at least one of the bond points in each of the rows is equally spaced apart from at least three other bond points, with the bond points in adjacent rows offset from one another. (Page 9, lines 4-6 and 17-19). The bonding process also includes the step of displacing portions 20 of each layer 12, 14 of material such that each of the displaced portions is in contact with at least one other displaced portion. (Page 10, lines 11-15).

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 3-10, 12-16, 18-29, and 31-32 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Bridges et al.* (U.S. Patent No. 5,624,420, hereinafter "*Bridges*") in view of European Patent Application No. 0 677 284 (hereinafter "*EP '284*").

7. ARGUMENT

Claims 1, 3-10, 12-16, 18-29, and 31-32 are non-obvious under 35 U.S.C. 103(a) based on the teachings of *Bridges* and *EP '284.*

In the final Office Action, mailed 12 October 2004, the Examiner rejected Claims 1, 3-10, 12-16, 18-29, and 31-32 under 35 U.S.C. 103(a) as being unpatentable over *Bridges* in view of *EP '284.*

A. Claims 1, 3-10, 12-16, 18-29, and 31-32

Applicants' invention as recited in independent Claims 1, 14, and 27 requires a leak-proof seal formed between at least two layers of liquid-impermeable material. The leak-proof seal includes ultrasonic bond points arranged in a configuration in which:

- There are at least three parallel rows of bond points
- Adjacent bond points in each row are at a distance between about 0.001 inch and about 0.20 inch from one another
- At least one of the bond points in each of the rows is equally spaced apart from at least three other bond points
- The bond points in adjacent rows are offset from one another

Bridges fails to disclose or suggest a bond or seal that is leak-proof. Instead, *Bridges* discloses a "tear line," which, as its name suggests, is a line of bond points that is designed to be torn apart. Furthermore, *Bridges* discloses that the ***weakness*** of the tear line is optimized such that the tear line is sufficiently weak to permit tearing (Col. 6, lines 34-35). As can be seen in Figs. 1A-1H of *Bridges*, at most there are three parallel rows of bond points (1E and 1F), but each row does not include at least one bond point that is equally spaced apart from at least three other bond points because the outer two rows have twice the distance between bond points as the inner row. Thus, each of the bond points in each of the outer rows is equally spaced apart from only two other bond points and no single bond point in the outer rows is equally spaced apart from at least three other bond points. The "zig-zag" pattern taught by *Bridges* may be conducive to creating the tear line of *Bridges*, but would not likely prevent leakage through a seam bonded in this configuration.

Furthermore, the teachings of *Bridges* are in direct opposition to Applicants' claimed invention. The purpose of *Bridges* is to use ultrasonic bonding to create lines of ***weak membranes*** such that a garment, particularly an elasticized area of a garment, can be torn apart along the weak membranes. The present invention, in contrast, is directed to an ultrasonic bond pattern that creates a considerably strong bond between two or more substrates with a ***reduced likelihood of tearing*** or unbonding compared to a continuous ultrasonic bond, and with the added feature of ***preventing leakage*** through the pattern of bonds. Since *Bridges* suggests that ultrasonic bonds can be used to form a zone of weakness, the use of a discontinuous bond pattern to create strong, leak-proof seams, as recited in Applicants' claims, is therefore completely non-obvious in view of *Bridges*.

Since the tear line in *Bridges* must be weak enough to permit tearing, it is unlikely that a person skilled in the art would modify the size, shape, and/or spacing of the bonds in *Bridges* to render the tear line "leak-proof." Instead, the bond points in the tear line of *Bridges* are sufficiently close together so that the material is sufficiently weakened to permit the specific material to tear progressively along the tear line, and are sufficiently spaced apart so as to retain sufficient residual strength of the unbonded fabric such that premature opening of the tear line will not occur (Col. 6, lines 61-67). By suggesting that closely-spaced bond points render a seam weak, and further-spaced bond points render a seam strong, *Bridges* teaches away from forming a leak-proof seam of closely-spaced bond points because a seam that is tearable (or weak) cannot prevent leaks. Additionally, adding more bond points to the outer rows in *Bridges* would likely render the tear line unsatisfactory for its intended purpose, namely the resulting tear line would likely be too strong to permit tearing.

Bridges also fails to disclose or suggest ultrasonic bond points bonding together at least two layers of liquid-impermeable material. The tear line in *Bridges* bonds together the inner layer and the outer layer of a garment. Although *Bridges* lists a number of suitable materials for the inner layer and outer layer of the garment, there is no suggestion that both the inner layer and the outer layer are liquid-impermeable. Even if the same materials were used to form the inner and outer layers, the materials would logically be treated differently (i.e., perforated or coated) to render the respective layers liquid-permeable or liquid-impermeable, for example. Since the garment includes an absorbent assembly positioned between the inner and outer layers, it would be illogical for the inner layer to be liquid-impermeable because a liquid-impermeable material would prevent any liquid from reaching the absorbent assembly.

The Examiner acknowledges that *Bridges* differs from the claimed invention because *Bridges* does not teach that at least one of the bond points in each of the rows is equally spaced apart from at least three other bond points. However, the Examiner suggests that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the bonds in *Bridges* according to the pattern shown in Fig. 4 of *EP '284*.

EP '284 fails to overcome the deficiencies of *Bridges*. *EP '284* discloses bond patterns for securing an elastic member within a containment flap. The bond

pattern in Fig. 4 of *EP '284*, although it is illustrated as having at least three parallel rows of thermal bond points, is described as an example of ***minimized use*** of thermal bonds in the containment flap (Col. 10, lines 1-3). In fact, *EP '284* suggests that the second pattern of thermal bonds (25), namely the bonds located between the elastic member and the proximal edge, may be spaced relatively far apart because it is not entirely critical to prevent the elastic member from passing outside the second pattern of thermal bonds (Col. 10, lines 20-30). Because of the considerable spacing between the thermal bonds in Fig. 4, the overall bond pattern does not appear to be leak-proof. Furthermore, there is no suggestion or motivation in *EP '284* to create a ***leak-proof*** bond pattern because the purpose of the bond pattern in *EP '284* is to maintain the elastic member in place between two layers, not to bond two components or substrates together to create a leak-proof seal. In contrast, as mentioned, the purpose of Applicants' invention is to provide an ultrasonic bond pattern that creates a strong bond and prevents leakage through the pattern of bonds. Unlike in *EP '284*, the bond points in Applicants' invention must be spaced relatively close together.

To establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. There is no suggestion or motivation to modify *Bridges* to achieve Applicants' claimed invention, nor is there any suggestion or motivation to combine the teachings of *Bridges* and *EP '284*.

Contrary to the Examiner's suggestion that "[o]ne of ordinary skill in the art would have been motivated to form the bonds [in *Bridges*] according to the pattern of Fig. 4 of *EP '284* because this configuration of point bonds imparts excellent strength to the bonded material, while still being soft and flexible," the combined teachings of *Bridges* and *EP '284* would not lead a person skilled in the art to develop an improved leak-proof seal, particularly not a leak-proof seal having the configuration recited in Applicants' claims, since neither *Bridges* nor *EP '284* discloses or suggests any type of leak-proof seal. Instead, *Bridges* is directed to a garment having tearable seams in a zone of weakness created by thermal bonds in lieu of perforations, while *EP '284*, on the other hand, is directed to containment flaps that have widely-spaced thermal bonds in lieu of

adhesive bonds. Thus *Bridges* and *EP '284*, alone or in combination, fail to disclose or suggest all of the claim limitations of Applicants' claimed leak-proof seal.

Simply stated, *Bridges* discloses a "tear line" extending from a waist opening to a leg opening in the front of a garment and *EP '284* discloses containment flap constructions that include an elastic member bonded between two layers. Because of the different locations and the different qualities of the bond patterns in these two references, there is no suggestion or motivation for combining the teachings of *Bridges* with the teachings of *EP '284*. Furthermore, these references teach away from the proposed combination thereof. More particularly, the purpose of the tear line in *Bridges* would be defeated if the bond pattern in *EP '284* were combined with the garment in *Bridges*, because the bond pattern in *EP '284* is designed to maintain an elastic member between two layers and is not designed to be weak or capable of tearing. Conversely, it would be counter-intuitive to combine the tear line of *Bridges* with the containment flaps of *EP '284* because a tear line within a containment flap would result in leakage upon tearing.

B. Claims 1, 3-10, 12-13, 27-29, and 31-32

As recited in Applicants' independent Claims 1 and 27, at least two layers of liquid-impermeable material are bonded together along an edge of at least one of the layers. *Bridges* fails to disclose or suggest locating the tear line along an edge of any layer, but instead teaches ***away*** from locating the tear line along an edge. More particularly, as disclosed in *Bridges*, if the tear lines are located near the side seams (i.e., near the edges of the inner and outer layers), the caretaker generally can not tear at both places without turning the child or changing hand positions (Col. 3, lines 58-61). In addition, *Bridges* suggests that the side seams may be constructed with maximum strength if the tear line is located other than at the side seams (Col. 3, lines 61-63). Thus, *Bridges* discloses point-bonded tear lines positioned ***away*** from the edges of the inner and outer layers, which is contrary to the limitations in Applicants' independent Claims 1 and 27.

C. Claims 14-16 and 18-26

As recited in Applicants' independent Claim 14, the leak-proof seal bonds a containment flap to a garment. *Bridges* fails to disclose or suggest a plurality of ultrasonic bond points joining a containment flap to a garment and forming a leak-proof

seal between the containment flap and the garment. Instead, the tear lines in *Bridges* are located on a front portion of the garment extending from the waist opening to the leg openings, thereby enabling a caretaker to tear the lines apart in order to remove the garment from the wearer. There is no suggestion in *Bridges* to attach containment flaps to a garment using a plurality of ultrasonic bond points.

EP '284 does not disclose or suggest a bond pattern for attaching containment flaps to a garment, but instead discloses bond patterns for securing an elastic member within a containment flap.

D. Conclusion

Even if the bond pattern in *EP '284* were combined with the garment of *Bridges*, there would be no reasonable expectation of success in achieving the leak-proof seal of Applicants' invention because the bond pattern would necessarily be applied in such a manner as to create a tear line having sufficient weakness. Additionally, absent impermissible hindsight, the resulting combination of *Bridges* and *EP '284* would not disclose or suggest the attachment of containment flaps to a garment using bond points, nor would the resulting combination disclose or suggest the location of a non-releasable, leak-proof seal along an edge of at least one layer of liquid-impermeable material.

For at least the reasons presented above, Applicants respectfully request the Board to overturn this rejection.

8. CONCLUSION

For the above reasons, Applicants respectfully submit that the rejections posed by the Examiner are improper as a matter of law and fact. Accordingly, Applicants respectfully request the Board reverse the rejection of Claims 1, 3-10, 12-16, 18-29, and 31-32.

A check for the fee required by 37 CFR 41.37(a)(2) and 37 CFR 41.20(b)(2), updated pursuant to the Fiscal Year 2005 Fee Schedule, in the amount of $500.00, is attached hereto. Please charge any additional amount owed, or credit any overpayment, to Deposit Account 19-3550.

Respectfully submitted,

Melanie I. Rauch
Registration No. 40,924

Pauley Petersen & Erickson
2800 West Higgins Road
Suite 365
Hoffman Estates, Illinois 60195
(847) 490-1400
FAX (847) 490-1403

APPENDIX A

1. A leak-proof seal, comprising:

at least two layers of liquid-impermeable material at least partially positioned in overlapping relationship;

a plurality of ultrasonic bond points bonding together the at least two layers of liquid-impermeable material along an edge of at least one of the layers;

wherein the bond points are aligned in at least three parallel rows with adjacent bond points in each row at a distance between about 0.001 inch and about 0.20 inch from one another, at least one of the bond points in each of the rows is equally spaced apart from at least three other bond points, and the bond points in adjacent rows are offset from one another.

3. The leak-proof seal of Claim 1 wherein adjacent bond points are at a distance of between about 0.0025 inch and about 0.175 inch from one another.

4. The leak-proof seal of Claim 1 wherein adjacent bond points are at a distance of between about 0.005 inch and about 0.15 inch from one another.

5. The leak-proof seal of Claim 1 wherein each bond point has a diameter of between about 0.005 inch and about 0.25 inch.

6. The leak-proof seal of Claim 1 wherein each bond point has a diameter of between about 0.010 inch and about 0.175 inch.

7. The leak-proof seal of Claim 1 wherein each bond point has a diameter of between about 0.015 inch and about 0.15 inch.

8. The leak-proof seal of Claim 1 wherein the bond points in adjacent rows are offset from one another by about 0 degrees to about 89 degrees.

9. The leak-proof seal of Claim 1 wherein the bond points in adjacent rows are offset from one another by about 15 degrees to about 75 degrees.

10. The leak-proof seal of Claim 1 wherein the bond points in adjacent rows are offset from one another by about 30 degrees to about 60 degrees.

12. The leak-proof seal of Claim 1 further comprising at least four parallel rows of bond points.

13. The leak-proof seal of Claim 1 wherein at least one of the layers of liquid-impermeable material is breathable.

14. A combination of at least one containment flap including a first liquid-impermeable material bonded to a garment including a second liquid-impermeable material, comprising:

a plurality of ultrasonic bond points joining the first liquid-impermeable material to the second liquid-impermeable material and forming a leak-proof seal between the at least one containment flap and the garment;

wherein the bond points are aligned in a pattern including at least three parallel rows, at least one of the bond points in each of the rows equally spaced apart from at least three other bond points with the bond points in adjacent rows offset from one another, such that each bond point is within about 0.001 inch to about 0.20 inch of at least one other bond point.

15. The combination of Claim 14 wherein each bond point is within about 0.0025 inch to about 0.175 inch of at least one other bond point.

16. The combination of Claim 14 wherein each bond point is within about 0.005 inch and about 0.15 inch of at least one other bond point.

18. The combination of Claim 14 wherein the first liquid- impermeable material comprises a liquid-impermeable film.

19. The combination of Claim 14, wherein the first liquid-impermeable material is breathable.

20. The combination of Claim 14 wherein the second liquid-impermeable material comprises a nonwoven material laminated to a liquid-impermeable film.

21. The combination of Claim 14, wherein the second liquid-impermeable material is breathable.

22. An absorbent garment comprising the combination of Claim 14.

23. A diaper comprising the combination of Claim 14.

24. A training pant comprising the combination of Claim 14.

25. A feminine hygiene article comprising the combination of Claim 14.

26. An absorbent underpant comprising the combination of Claim 14.

27. A bonding process for bonding together two layers of liquid-impermeable material, comprising the steps of:

ultrasonically forming a leak-proof bond between the two layers along an edge of at least one of the layers with discrete bond points aligned in at least three parallel rows, with adjacent bond points in each row at a distance between about 0.001 inch and about 0.20 inch from one another, at least one of the bond points in each of the rows equally spaced apart from at least three other bond points, with the bond points in adjacent rows offset from one another; and

displacing portions of each layer of material, wherein each of the displaced portions is in contact with at least one other displaced portion.

28. The bonding process of Claim 27 wherein at least one of the layers of liquid-impermeable material comprises a nonwoven web.

29. The bonding process of Claim 27 wherein at least one of the layers of liquid-impermeable material is breathable.

31. The bonding process of Claim 27 wherein the bond points are aligned in a pattern such that each bond point is within about 0.0025 inch to about 0.175 inch of at least one other bond point.

32. The bonding process of Claim 27 wherein the bond points are aligned in a pattern such that each bond point is within about 0.005 inch and about 0.15 inch of at least one other bond point.